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W. W. CHARTERS ..... *Editor*
J. MACLATCHY ..... *Assistant Editor*

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Proportion of Public Expenditures Devoted to Teachers' Salaries

By H. H. DAVIS

IN VIEW of the current demand on the part of some taxpayers that teachers' salaries be reduced as a means of lowering taxes, it is desirable to consider how large a part of the tax dollar goes to pay such salaries. Only on the basis of such data can we estimate how effective teachers' salary cuts are likely to be as a method of reducing taxes. Taxes pay for many governmental activities, of which education is but one. Welfare, highways, protection of person and property take important parts of the tax dollar. Teachers' salaries, in turn, make up only a part of the education dollar. New buildings, plant operation, plant maintenance, transportation, debt service, and the like take up important portions of that part of the tax dollar which is devoted to education.

Table I, as developed in connection with our study of teachers' salaries at Cleveland, shows these relationships clearly for the eight large cities included in that study.[1] Based on the median it shows that of each public dollar expended only 27.8 cents is used for education. Of this 27.8 cents, 7.4 cents are required for capital outlay and debt service, and of the 20.4 cents remaining for current use only 12.9 cents are available for teachers' salaries. The largest share of the tax dollar is secured by Pittsburgh teachers, and they get only 14.8 cents of it. The lowest is at Detroit, where the teachers' salary roll accounts for only 9.6 cents from each public dollar expended—less than 10 per cent.

Returning to the median figures for consideration of the question, we find that a reduction of 10 per cent in teachers'

[1] Holy, T. C., and others. *Cleveland Teachers' Salaries.* Columbus, Ohio: Ohio State University, 1932. (Bureau of Educational Research Monographs, No. 16)

salaries would reduce taxes only 1.29 per cent, and that it would require a reduction of salaries amounting to nearly 80 per cent to effect a tax reduction of 10 per cent. There is, then,

TABLE I

PERCENTAGE OF TOTAL GENERAL EXPENDITURES DEVOTED TO VARIOUS PURPOSES IN 1930[a]

City	Non-School	School	School Current	Teachers' Salaries
(1)	(2)	(3)	(4)	(5)
Pittsburgh	67.7	32.3	23.4	14.8
Buffalo	64.0	36.0	23.6	14.4
Cleveland	69.2	30.8	23.5	14.1
San Francisco	71.2	28.8	20.4	13.7
St. Louis	73.2	26.8	20.5	12.6
Boston	76.9	23.1	18.4	12.2
Baltimore	73.2	26.5	18.8	11.3
Detroit	76.5	23.5	15.1	9.6
Median	72.2	27.8	20.4	12.9

[a] *Op. cit.*, p. 127 (Table LI).

TABLE II

COMPARISON OF PUBLIC-SCHOOL TEACHER SALARY COSTS WITH TOTAL CITY AND SCHOOL COSTS. LARGE OHIO CITIES, 1930

	City[a]	Schools[b]	Total	Teachers' Salaries	Percentage Teachers' Salaries Are of Total Tax
(1)	(2)	(3)	(4)	(5)	(6)
Akron	$11,338,886	$ 5,330,000	$16,668,886	$2,708,000	16.2
Canton	3,571,963	2,601,000	6,172,963	1,145,000	18.5
Cincinnati	23,476,744	10,450,000	33,916,744	5,110,000	15.1
Columbus	10,584,502	6,272,000	16,856,502	3,112,000	18.5
Dayton	7,181,162	4,002,000	11,183,162	2,060,000	18.4
Toledo	15,463,055	6,082,000	21,545,055	3,259,000	15.1
Youngstown	5,295,029	4,251,000	9,546,029	2,067,000	21.7

[a] Ohio. *Comparative Statistics Cities of Ohio 1930.* Columbus, Ohio: Bureau of Inspection and Supervision of Public Offices. 1931.

[b] From reports on file in the office of the Ohio State Department of Education.

little evidence in the data for these cities to support the thesis that the way to tax reduction lies in cutting teachers' salaries.

FACTS are also available for a study of large Ohio cities other than Cleveland in a somewhat similar way, and they are accordingly presented in Table II. Since these data do not include county and state taxes, they are not strictly comparable with the figures in Table I or Table III. They are significant,

however, from a municipal standpoint. Even on this restricted basis teachers' salaries are seen to be relatively minor factors in the total governmental cost figure. The median proportion of the public costs used for teachers' salaries is about 18 per cent.

STATISTICS on a state-wide basis are also available from compilations made for the Ohio School Survey Commission. These data cover six of our largest and wealthiest states, and are set forth in Table III. The salary figures are approximate, because they are not usually reported for a fiscal year but for a school year. Also, some adjustments must be made to render reports from various states comparable.

TABLE III

PROPORTION OF TOTAL TAX DEVOTED TO EDUCATION AND TO PUBLIC-SCHOOL TEACHERS' SALARIES. SIX LEADING STATES, 1930

	Total State and Local Tax	School Tax	Approximate Amount Spent for Teachers' Salaries	Percentage Teachers' Salaries Are of Total Tax
(1)	(2)	(3)	(4)	(5)
California	$ 446,692,000	$149,486,000	$ 80,000,000	17.9
Massachusetts	320,539,000	81,128,000	45,000,000	14.1
Michigan	347,569,000	106,341,000	54,000,000	15.5
New York	1,141,369,000	309,748,000	180,000,000	15.8
Ohio	413,993,000	141,629,000	68,000,000	16.4
Pennsylvania	538,128,000	175,397,000	88,000,000	16.4

These percentage figures do not cover a wide range, and the median of about 16 per cent may be accepted as a reasonably reliable measure of the tendency of these states. Thus it is seen that a little less than one-sixth of the tax dollar is used for teachers' salaries in these states. A cut of more than 60 per cent in teachers' salaries would be necessary to effect 10-per cent tax relief.

The cumulative evidence of these three tables should give pause to those who rely heavily on cuts in teachers' salaries as easy roads to tax relief. The attack on teachers' salaries is probably based less on facts or merit than on the theory that teachers are by tradition impecunious and self-sacrificing. In closing, it should be observed that the figures presented deal only with state and local taxes. Inclusion of proportional shares of Federal tax would have still further reduced the ratio of teachers' salary costs—probably to 10 per cent or less.

Arithmetic Grade-Placement Investigations of the Committee of Seven

A REPLY TO LOUIS E. RATHS[1]

By CARLETON WASHBURNE, CHAIRMAN[2]

IN THE EDUCATIONAL RESEARCH BULLETIN of January 20, 1932, Louis Raths criticizes severely the conclusions of the Committee of Seven in its grade-placement investigations, using as a basis for his criticism an analysis of some of the Committee's data in regard to the placement of addition and subtraction of fractions. Some of Mr. Raths's criticisms are valid where they bear upon the limitations of the Committee's study. Some of these limitations have been frankly stated by the Committee.[3] When, however, Mr. Raths makes such statements as that which follows:

> Intelligence-test scores surely are not significant in their influence on grade-placement; their contribution to the prediction is almost negligible. Scores made on the addition test correlated relatively low with the criterion and relatively high with other prerequisites. Hence, it makes only a slight contribution to the correlation[4]

he is stepping away not only from the actual data, but from common sense and from his own tables. He implies that one needs no brains to learn arithmetic. He bases these statements on the small addition which intelligence-test scores and certain other elements make to accuracy of prediction in a regression equation involving several elements. Surely, he realizes that two factors which have positive predictive value separately may

[1] "The Grade-Placement of Addition and Subtraction of Fractions," EDUCATIONAL RESEARCH BULLETIN, XI (January 20, 1932), pp. 29–38.

[2] Other members of the Committee of Seven of the Northern Illinois Conference on Supervision are Orville T. Bright, superintendent of schools, Dolton; Harry O. Gillet, principal, University of Chicago Elementary School; J. Robb Harper, superintendent of schools, Wilmette; Howard C. Storm, superintendent of schools, Batavia; O. E. Peterson, Northern Illinois State Teachers College, DeKalb; Raymond W. Osborne, assistant principal, Francis W. Parker School, Chicago, *secretary*. The director of the Research Department of the Winnetka public schools meets with the Committee and directs the work on the tests and the tabulations.

[3] The best summary of the merits and limitations of the work of the Committee is to be found in a speech by Harry O. Gillet which was read May 8, 1931, at the meeting of the Northern Illinois Conference on Supervision at DeKalb. Copies of this speech may be obtained for five cents ($.05) by addressing Committee of Seven, Research Department, Skokie School, Winnetka, Illinois. An article, "Some Desirable Administrative Changes in the Teaching of Arithmetic" by Raymond W. Osborne and Harry O. Gillet to be published in the *Nation's Schools* also is helpful.

[4] *Op. cit.*, p. 36.

have so high an intercorrelation between themselves that neither one alone adds particularly to the predictive value of a regression equation. Let us suppose, for example, that height is a fair predictor of age in children below the age of sixteen, and that weight is a fair predictor of age for such children. Height and weight are so closely interrelated that a regression equation in which one of these appeared would be little improved by the addition of the other. To assume from this that neither one is a predictor is palpably absurd.

The coefficients of correlation shown by Raths between intelligence-test results and retention tests in fractions is .44; the correlation between retention test in fractions and ability to add is .40. While both of these are positive correlations, high enough to be significant, they are certainly too low for prediction. If, however, the hypothesis of the Committee is sound, that there is a stage of growth before which results are usually unsatisfactory and after which results are usually satisfactory, and further that, as one increases mental age beyond this stage, there is little increase in ability to learn the particular topic involved, these low correlations would not necessarily mean much. The data gathered by the Committee indicate an S-curve, rather than a straight-line curve, and indicate that relatively few children in the lower end of the S-curve will reach a given standard of retention, while relatively few children in the upper part of the S-curve will fail to reach it. A purely hypothetical distribution of such a curve gave a correlation coefficient of .45. Two hundred cases were divided evenly into 20 intervals on the y axis. They were distributed along a 16 interval x axis as follows: the 100 cases which fell between 1 and 10 on the y axis were distributed so that 8 in each interval fell between 0–7, the other 2 falling between 8–16; the 100 cases which fell between 11 and 20 on the y axis were distributed so that 8 in each interval fell between 8–16 while the remaining 2 fell between 0–7. The distribution within these limits was random. Assuming that the y axis represents intelligence scores and the x axis, retention scores, this is a picture of a case in which one-fifth of the children with intelligence scores of 10 or under and four-fifths of the children with the intelligence scores of 11 or over made retention scores of 50 per cent or over. In spite of the apparently low relationship between intelligence and retention scores as indicated by the coefficient

of correlation, it would surely be well to wait until four-fifths of the children would fall above the halfway mark.

In other words, a coefficient of correlation is not the proper way of handling the data. A correlation ratio could be used, but would be of less practical value than the much simpler procedure used by the Committee. That procedure is to state what the chances are of a child's succeeding with a given process before and after reaching a given level of mental development or arithmetic achievement. The data assembled by the Committee on this point are unequivocal. The practical significance is definite. There is a stage of mental growth below which children have relatively small chance of reaching the standard of achievement set by the Committee within the limits of the set-up of the experiment. Beyond this stage of growth the chances are greatly increased.

What the practical classroom teacher wants to know is whether there is a reasonable chance of children's achieving success in a topic. Both for her sake and that of the children, she does not want to give children work if the chances are against their succeeding in it.

THE question "What shall be done about those children who achieve the standard in learning, but who do not achieve the prerequisite score?" is also raised by Mr. Raths.[5] By this he apparently wants to know what will happen to the child who could have learned the process at a lower mental level than that which the data of the Committee have indicated to be desirable. In a practical school situation he will postpone the learning of the topic a little longer than in his individual case was strictly necessary—certainly a harmless result as compared with the harmfulness of trying to impose on the majority of children a task which proves to be too difficult for them to perform.

The Committee has suggested that a topic should not be taught until there was a reasonable chance that three-fourths of the children would be able to retain 80 per cent of the topic,[6] as measured by its tests, six weeks after the close of teaching.

[5] *Op. cit.*, p. 34.

[6] Washburne, Carleton. "One Reason Children Fail in Arithmetic," *Progressive Education*, IX (March, 1932), p. 219. Also, "Mental Age and the Arithmetic Curriculum," *Journal of Educational Research*, XXIII (March, 1931), pp. 210–29; and "The Grade Placement of Arithmetic Topics: A Committee of Seven Investigation," *Twenty-ninth Yearbook of the National Society for the Study of Education*, p. 643.

As to the arbitrariness of this standard, the Committee has made no bones. Undoubtedly, as can be seen immediately from the Committee's graphs and data, the mental level at which a topic could be taught would be lowered if one were content to have seven-tenths of the children reach 80–per cent retention or three-fourths of the children reach 70–per cent retention. By lowering the standard of what is to be achieved, of course one lowers the mental age at which it can be achieved and vice versa. The data in the possession of the Committee enable a person to set whatever standard he pleases and determine what proportion of the children can reach this standard at any given mental age.

Mr. Raths's suggestion that a critical evaluation of the tests employed might reveal opportunities of improvement is sound. There is no question but that the tests could be improved, although they were the result of careful thought and study on the part of experienced persons. Mr. Raths is right that only further experimentation will show whether the inadequacies of the tests may have placed the grade-levels too high or too low. The Committee will be exceedingly glad to give any assistance or the benefit of any of its experience to Mr. Raths in the conducting of such further experimentation, or to any other person who will carry it forward. The Committee would like to see all the experiments repeated under a variety of conditions and with every possible improvement.

THERE is also no question but that grade-placement of topics depends on other factors besides efficiency of learning and teaching. Also, other things being anywhere nearly equal, one certainly wants to place a topic where it can be most effectively learned. Some of Mr. Raths's hypotheses in this regard are interesting, and again the Committee would welcome experimentation by him or anyone else, to see how far changing the materials of instruction, the time of instruction, the methods of teaching, the setting of the teaching, or any of the other factors may influence the grade-placement of a topic. If the investigations of the Committee will stimulate such investigations, they will have served an important purpose.

Mr. Raths uses the regression-equation method in his determination of the grade-placement of addition and subtraction of fractions. It is the obvious technique and the one originally

employed by the Committee.[7] The reasons which caused the Committee to discard this method are still valid: In the first place, the method is, in the case of these data, statistically unsound. The formula used assumes that "the tables from which the original coefficients are obtained are sensibly linear."[8] Many of the Committee's data have not been "sensibly linear."

In the second place, the regression-equation method is practically unusable for the teacher. She cannot be expected to use a regression-equation formula for each child and predict whether or not he is ready for a given topic. Furthermore, a multiple *R* is going to mean relatively little to the average teacher, whereas it means a great deal to her to know what the chances are of a child's being able to learn the topic in question.

If a teacher knows that the chances are three out of four that a child will attain a reasonably good mastery of a topic, she feels justified in presenting it. If the chances are reversed, she does not feel justified in presenting it. It is simple, understandable, and practical to state what the chances are of learning a given topic in terms of the child's mental level and his achievement in foundations tests. It is not practical to ask the teacher to put these results together in a regression equation and make a more or less meaningless prediction for each child.

THE critique of Mr. Raths is wholly negative. It gives no suggestion as to any organized experiments or any objective substitute for the reorganization of the curriculum proposed by the Committee. The implication is that one might just as well leave the curriculum as it is, with its obvious misplacements, as to attempt a reorganization on the basis of such facts as are available from the six years of study that the Committee has made with the co-operation of several hundred cities and many thousands of children. The Committee disagrees with this implication, and suggests that a curriculum based upon such research as is available is better than a curriculum based on no research whatsoever, especially when the traditional curriculum violates common sense and results in a large number of failures.

[7] This method was tried with simple long division. The coefficient of multiple correlation between retention test, intelligence-test, and foundation scores was .69. The probable error of estimate was 1.42. The coefficient of multiple correlation between subtraction facts retention test, intelligence-test, and foundation scores was found to be .74. Then the method was discarded as fallacious and meaningless.

[8] Holzinger, Karl J. "Statistical Methods for Students in Education," p. 285.

Surely the experiments of the Committee of Seven should be followed by many other experiments. The findings of the Committee should be used merely as points of departure, and whenever new and refined or more extensive experiments indicate that a particular topic should be adjusted up or down in the curriculum, the findings of those experiments should be promptly substituted for the findings of the Committee.

I should like to offer one word of practical observation as to the results of reorganizing the curriculum in accordance with the tentative recommendations of the Committee: A number of teachers have been consulted as to the effect upon the children and upon their own work of this reorganized curriculum, where they have been carrying it out for a year or more. Without an exception, they report fewer failures, more interest, greater ease, and a generally increased satisfaction on the part of teacher and pupil. Let us warn the reader, however, that these are informal, unchecked, common-sense observations by teachers, rather than accurately measured results. When a number of schools have incorporated the tentative recommendations of the Committee in their curriculums over a period of a few years, careful tests should be made as to the effect on children's success in arithmetic.

The investigation made by the Committee of Seven is the pioneer one in the field of arithmetic grade-placement. Any pioneering effort must be subject to many limitations and crudities—these have been frankly faced by the Committee—but all progress depends upon pioneering. [Vol. XI, No. 15]

Once Again

A REPLY TO MR. WASHBURNE'S CRITICISM

By LOUIS E. RATHS

THE Editor has kindly afforded me this opportunity to reply to Mr. Washburne. I shall first consider that part of his reply which has reference to the very basis of all the experiments conducted by his Committee, the tests which were employed. He says: "There is no question but that the tests could be improved, although they were the result of

careful thought and study on the part of experienced persons." May we not expect from persons experienced in experimental education an endeavor to utilize tests that are valid and reliable? Notwithstanding the extensiveness of the experimental program of the Committee the numbers of teachers, cities, and pupils co-operating, the time and money consumed in the work, not a single test used by the Committee has to my knowledge been subjected to any experimentation for the purpose of determining reliability or validity. In other words, so far as the Committee is concerned, they do not know now whether a

TABLE I

COEFFICIENTS OF CORRELATION AND CORRELATION RATIOS

	Correlation Coefficient		Correlation Ratios	Number of Probable Errors of Difference
(1)	(2)	(3)	(4)	(5)
r_{12}	.438	η_{12}	.474	3.61
r_{12}	.438	η_{21}	.448	1.89
r_{13}	.505	η_{13}	.550	4.31[a]
r_{13}	.505	η_{31}	.519	2.39
r_{14}	.496	η_{14}	.499	2.01
r_{14}	.496	η_{41}	.513	2.60
r_{23}	.372	η_{23}	.393	2.55
r_{23}	.372	η_{32}	.402	3.05
r_{24}	.362	η_{24}	.363	.56
r_{24}	.362	η_{42}	.381	2.39
r_{34}	.249	η_{34}	.271	2.15
r_{34}	.249	η_{43}	.300	3.33

Variable 1 = Retention scores
Variable 2 = Intelligence scores
Variable 3 = Subtraction scores
Variable 4 = Meaning of fraction scores

[a] It is probable that this represents a non-linear relationship, but the advantage of using η_{13} over the correlation coefficient is very small.

single one of their many tests is a valid and reliable measuring instrument for their purpose.[1] Mr. Washburne's gesture toward waiving this criticism by inviting other experimenters to aid him is beside the point. He and his Committee have undertaken a responsibility for experimentation in the grade-placement of topics in arithmetic. Where their technique is unsound, where their measuring instruments are open to criticism, they may not evade that responsibility by asking for additional help. They have published the results of their experiments, and my article was a criticism of their statements.

Mr. Washburne devotes most of his reply to a criticism of

[1] With the obvious exception, of course, of the intelligence tests used.

the regression-equation technique which I employed. He states that the method is unsound because the data are not sensibly linear. Before my article was published all of the distributions were checked for linearity; this was the obvious thing to do before applying the technique of the regression equation. All of the distributions used in my article were found to be sensibly linear. I did not select two hundred cases from my data as Mr. Washburne did and examine that particular hypothetical example. I examined all of the data. The coefficient of correlation and both correlation ratios for each distribution are presented in Table I. Blakeman's[2] test for linearity was applied, and the number of probable errors of difference between the coefficient of correlation and the correlation ratios are also shown in Table I. Where the difference amounts to more than four times the probable error, there is ground for believing that the distribution is not sensibly linear.[3] It is to be noted that all of the distributions in which intelligence-test scores appear as a factor are linear. It is further to be noted that Mr. Washburne's statement about the non-linearity of the data is not supported by the facts presented in this table.

One difference between my results and those of Mr. Washburne consists in the subjects we employed. I used all of the pupils tested. He sets up an hypothesis and eliminates 70 per cent of the pupils because of the restrictions of that hypothesis. Let us see how far we differ in the predictions which we make. Mr. Washburne and his Committee report that the topic the addition and subtraction of fractions may be taught when children have achieved a score of 96 per cent on the foundations test in addition, a score of 97 per cent in subtraction, and a perfect score of 4 in the test covering the meaning of simple fractions. Above and beyond this, however, Mr. Washburne and his Committee indicate as a further requirement a minimal mental age of nine years ten months. If the recommended foundations-test scores are substituted in my regression equation we have

$$X_1 = .202\,X_3 + 3.89\,X_4 + .74 \pm 5.15$$

or substituting the values

$$X = 202\,(97) + 3.89\,(4) + (.74 \pm 5.15 = 35.89) \pm 5.15$$

[2] Garrett, H. E. *Statistics in Psychology and Education*, p. 210, Formula (45).
[3] Holzinger, Karl J. *Statistical Methods for Students in Education*, p. 237.

If 5.15 (the probable error of estimate) is subtracted from the predicted score of 35.89 there is a remainder of 30.74 . This represents an achievement score in per cent of 76.9. Three-fourths of the pupils may be expected to achieve this score or more. Mr. Washburne's conclusions state that three-fourths of the pupils will achieve 80 per cent or more, but to make his prediction he includes the additional factor of intelligence-test scores. Our conclusions are not significantly different, and I employ the regression equation. The factor of intelligence-test scores was not employed in my regression equation because it did not add appreciably to the prediction when the other prerequisites had already been evaluated.

In my article I presented data to show that there was a relationship between intelligence-test scores and retention-test scores represented by the correlation coefficient of .44. It is obvious that if we had no other information this knowledge would be helpful in predicting the retention which pupils would achieve. The point I was trying to make was that when the prerequisites are evaluated for their influence, and evaluated properly, there is no advantage gained in prediction by including for consideration the additional factor of intelligence-test scores. It was in the midst of a discussion of multiple correlation that I made the statement: "Intelligence-test scores surely are not significant in their influence on grade-placement; their contribution to the prediction is almost negligible." This discussion refers particularly to the publications of the Committee of Seven, because their conclusions take into consideration the factors of prerequisites and scores made on intelligence tests. My study shows conclusively that when the prerequisites are evaluated for this influence it is no advantage in prediction to consider also the element of intelligence-test scores. My study shows further that the relationships are of a linear nature and that the use of the regression equation is justified.

Hence, interpretations of the data which tend to magnify or emphasize the influence of intelligence-test scores on the results of learning the addition and subtraction of fractions are without foundation in fact. Hence, it is difficult to see how statements of this nature could properly be drawn from the data.

Little need be said about Mr. Washburne's comment that my criticism is wholly negative. My results indicate that the

intelligence-test scores used in this experiment do not contribute an appreciable addition to the prediction. Hence, in the employment of the regression-equation technique and for the purposes of grade-placement, it will be unnecessary to buy those particular tests, administer them, score them, and use the results. Surely, any critique which yields results so economical of time and money may not be charged with being "negative."

Even less need be said about the two implications which Mr. Washburne sees in my article: (1) " . . . that one needs no brains to learn arithmetic." Here Mr. Washburne confuses brains with scores made on intelligence tests and assumed that this intelligence may not have been measured by the other tests. (2) " . . . that one might just as well leave the curriculum as it is." Readers will judge the fairness of this implication which Mr. Washburne reads into the study, and I am content to submit it again and without comment. [Vol. XI, No. 15]

Rebuttal

By CARLETON WASHBURNE AND WILLIAM H. VOAS

THANKS to the Editor of the EDUCATIONAL RESEARCH BULLETIN we are permitted a brief rebuttal to Mr. Raths's answer to our reply to his criticism of the work of the Committee of Seven. Mr. Raths in his answer attacks first the fact that the Committee of Seven did not submit the tests used to the usual process of validation and check for reliability. Second, he shows that in the particular data he used there was sufficient linearity to justify the use of the regression equation. Third, he again emphasizes the fact that in his study of one group of the Committee's data he used "all subjects"—he does not eliminate those children whose foundations tests showed that they were not yet ready to undertake the new topic. Fourth, he again maintains that there is no advantage gained in prediction through the inclusion of intelligence-test scores. His positive suggestion is that schools need not buy intelligence tests in order to find children's readiness to learn any given topic in arithmetic. The third and fourth points hinge upon a common conception. It is in connection with them

that we find the main issue between Mr. Raths and the Committee of Seven. We shall, therefore, after a brief reply to his first two points, devote our attention to this really crucial issue.

First, the foundations tests gave indication of validity by predicting, with as much accuracy as could be expected, the learning of the process for which they were to be foundations; in other words, they measured what we wanted them to measure. The process tests, it will be remembered, were in three equivalent forms: a pre-test given before the teaching process began, a final test given at the close of the teaching process, and a retention test given six weeks later. The sharp rise in scores between the pre-test and the final test during the teaching period and the slight fall between the final test and the retention test are clear indications that the tests measured what we wanted them to measure, namely, the result of the teaching. The reliability of the tests was not statistically checked, but it is shown by the high relationship between retention-test scores and final-test scores, the retention and final tests being equivalent forms of the same test, as already indicated. There is some evidence, therefore, that the tests were both valid and reliable.

Second, Mr. Raths shows that for the fragment of the data used by him the distribution was sufficiently linear to justify the use of the regression equation. This was also true for the fragment represented by the long-division process; the Committee of Seven naturally tested out many more things than were tested by Mr. Raths. In the study of the process of subtraction, on the other hand, the Committee found that seven regression lines were linear, and three non-linear, the non-linear including intelligence on retention. Out of the four correlations in subtraction facts seven regressions were non-linear and only one linear. In short, while for certain topics or phases of topics some of the regression lines were sufficiently linear to justify regression equations, for others they were not. The regression-equation technique, as a means of determining children's readiness to undertake a given process, was deliberately thrown out by the Committee of Seven after a series of such studies. In too many cases it did not apply, and it is unnecessarily cumbersome for the use of the classroom teacher.

Over and over again Mr. Raths criticizes the Committee of Seven for eliminating considerable numbers of children from the study. The Committee has explained its procedure in this

regard quite definitely. All of the Committee's results (and Mr. Raths's own results) show that it is comparatively futile for a child to undertake the study of a process for which he does not have an adequate foundation in terms of prerequisites. The Committee is attempting to emphasize, as vigorously as it can, for the benefit of all teachers, the importance of giving children a thorough foundation in the number facts and processes to be used in the study of a new topic before that new topic is undertaken. This is sound pedagogy, it is sound common sense, it makes for practical efficiency, and it is amply justified by all the data. Hence, the "elimination" of children with low foundations-test scores.

Now comes the crucial question: Of the children who have achieved reasonable mastery of the foundations, are all ready to undertake the study of the new topic? A study of the Committee's graphs and data makes it perfectly evident that they are not and that mental age is a distinct predictive factor. When children of approximately the same level of ability as measured by foundations-test scores are taught a topic under the same conditions, there is a marked rise in the percentage of children who master that topic as one goes into the higher levels of mental age. The data show, and Mr. Raths at no point has refuted the fact, that foundations-test scores being equal the percentage of children who can achieve satisfactory scores in the topic being taught increases in proportion to mental age.

The confusion arises because Mr. Raths uses a mixture of children with varying degrees of foundations-test ability and varying mental age; he then works a regression equation in which he shows that the correlation between retention and the aggregate contributing factors is only slightly increased when intelligence-test scores are included. It is a case where statistical manipulation hides the truth, instead of revealing it.

Consider the following multiple correlations which were computed from the zero-order relations in Mr. Raths's table:

$R_{1.23456}$ = .676

$R_{1.2345}$ = .661 (eliminating the addition foundations test lowers the multiple R by .015)

$R_{1.3456}$ = .661 (eliminating the intelligence-test scores lowers R by .015)

$R_{1.2456}$ = .639 (eliminating the subtraction foundations scores lowers R by .037)

When

1=retention test,
2=intelligence test,
3=subtraction foundations test,
4=meaning of fractions (non-grouping) foundations test,
5=meaning of fractions (grouping) foundations test, and
6=addition foundations test.

In a multiple correlation involving five variables in relation to a criterion, the contribution of any one of the variables to the total R is slight when the intercorrelations between the variables themselves are fairly high. If it were legitimate to consider intelligence-test scores as negligible factors in predicting readiness for the study of addition and subtraction of fractions, it would, by Mr. Raths's logic, be equally legitimate to consider as negligible the child's ability to add integers! The process of multiple correlation covers up contributions that may prove to be not only apparent, but decidedly influential as well, when a practical method for holding the other variables constant is found. Again, partial correlations consider the whole range of each variable, so the following partials do not give us the practical information we need:

$R_{16.2345}$=.127 (relation of addition foundations to retention)
$R_{12.3456}$=.105 (relation of intelligence to retention)

A more practical method of rendering the foundations tests constant is to set a standard which eliminates those children who are not ready to meet the test requirements. Those who are not eliminated still vary in their mastery of foundation processes, but that variation is not wide enough to handicap members of the group seriously in their mastery of the new process. For practical purposes, preparation has been leveled or made constant. Now the information secured from intelligence-test scores becomes significant.

After all, the real question confronting the teacher is not "to what extent will the element of intelligence-test scores influence predictability in a regression equation in which all children, regardless of preparation, are included?" It is, rather, "granted that every child should be brought to a reasonable mastery of prerequisite arithmetic skills, which children are ready to go on to a given topic? Will intelligence-test scores help in selecting these children?" And the answer to this is clearly given in all the Committee's graphs and tables.

The Committee's data show, for example, that of children who have mastered the necessary foundations for the addition and subtraction of fractions, a small proportion (42 per cent) of those with a mental age of nine are able to learn (under the conditions of this study) to add and subtract like fractions and mixed numbers involving like fractions, whereas there is a steadily mounting per cent up to the mental age of twelve, where 89 per cent of the children, *with the same foundations test scores*, can effectively master this topic.

The work of the Committee of Seven is for the practical guidance of teachers and school administrators. It indicates definitely that certain prerequisite materials must be learned well before a new topic is undertaken. It indicates further that of the children who have learned this material well, some are much more ready to undertake the new topic than others, and that they may be discovered through the use of mental tests. It indicates still further that mental age, as shown by intelligence tests, can be used as a practical criterion for the probability of success of children who have mastered the prerequisite fundamentals and who are about to undertake the study of a new topic.

While further study is needed and while the exact mental age-levels suggested by the Committee of Seven may be modified in the light of further experimentation, the data of the Committee give the basis for a practicable, psychologically ordered reorganization of the arithmetic curriculum.

[Vol. XI, No. 15]

The Last Word

A REPLY TO MR. WASHBURNE'S "REBUTTAL"

By LOUIS E. RATHS

HAD certain assumptions made by Mr. Washburne been valid there would have been no question about the validity of his procedures. In the first place he assumed that the data were not linear; that they were S-shaped. He based his procedures upon that assumption. It has been shown, however, that the data are linear. In spite of the facts (which he accepts) he continues to argue for support of his methods.

The tests were assumed to be valid and reliable. The evidence which Mr. Washburne marshals in support of this assumption is certainly inadequate.

In his final argument Mr. Washburne says that I used only a "fragment" of the data, whereas I used all of the data concerning the experiment and he used the fragment He may mean that my criticism does not apply to *all* of he grade-placement studies conducted by his Committee, but that is only a way of avoiding the issue: my criticism does apply to the experiment which is being discussed. My data do not concern the other experiments, and I did not intend that my criticism should apply to them. [Vol. XI, No. 15]

* * *

A MONOGRAPH entitled *Financial Ability of Ohio City and Exempted-Village Schools Districts* by T. C. Holy and D. H. Sutton, published by the Bureau of Educational Research, reports the bond issues and special levies issued by the cities and exempted villages and by the counties of Ohio between 1926–29. Their significance in terms of the financial ability of the school unit is discussed, and the purpose for which they were passed is mentioned.

Two mimeographed leaflets containing similar information for 1932 have just been distributed. Thirteen cities submitted special levies for current expenses, in nine of which the levies were carried. The average vote favoring the levy comprised 65 per cent of the voters. This measure ranged from 51 to 89 per cent. Five of eight exempted villages carried the special levy with a favoring vote which averaged 68 per cent. No bond issues were submitted in either cities or exempted villages.

Of the eighty-eight counties of Ohio ten submitted bond issues for erecting school buildings. Half of these were passed, totaling $171,500. The range of votes favoring these bond issues was 65 to 83 per cent; the General Assembly raised the proportion of favorable votes necessary to the passing of a bond issue to 60 per cent in 1931. The percentages of favoring votes for the issues which failed ranged from 29 to 58 per cent. Seventy-one counties submitted special levies, of which 60 per cent were passed by an average vote of 68 per cent.

EDITORIAL COMMENT

SCHOOL costs increased during the years intervening between 1914 and 1930 from $555,077,000 to $2,320,776,000. The causes for this increase have been analyzed and proportioned by the Research Division of the National Education Association as follows: 48.7 per cent due to depreciation of the dollar; 27.3 per cent due to increased enrollment; and 23.98 per cent to such other causes as changed curriculum to meet needs of increased enrollment especially in high school, better trained teachers who of necessity merit higher salaries, improved equipment, improved libraries, and the like. Increased enrollment has been due to several factors: a 9–per cent increase in the length of the school term since 1914, a 34–per cent increase in school enrollment below the college level, and an improvement of 65 per cent in school attendance.

Even though this extraordinary increase has occurred, the cost of schools has never exceeded 4 per cent of the annual national income—it was 3.35 per cent in 1930. In the Bulletin just referred to the relation of the costs of education to other common forms of nation-wide expenditure have been reckoned. Out of every $100 of national income in the United States $3.35 is spent for schools, $4.52 for life insurance, $2.22 for building construction, and $15.15 for passenger automobiles.[1] Surely with these four comparable measures in mind no one will believe school costs to be exorbitant.

Other facts given in this pamphlet are the relative proportions of tax collections in the United States and in England, France, Italy, Germany, and Japan; the relation of school costs to other governmental costs; and the proportionate relation between wealth and school property in the states of the Union. Every teacher and school administrator will profit by reading this brief summary of school costs.

IN THESE days of financial strain one of the first places to look for curtailment of funds is to the school. When the school costs of the local community are considered, disregarding their

[1] "Facts on School Costs," *Research Bulletin of the National Education Association*, X (November, 1932), pp. 205–226.

proportionate relations to other costs of the community, they seem to offer an excellent place for retrenchment. In an article in this issue, however, Mr. Davis shows that teachers' salaries are but a small part of total city costs. A 10–per cent reduction in the taxes of eight large cities, one of which is Cleveland, would require a cut of 80 per cent in teachers' salaries, while a similar tax reduction through the state of Ohio would require a salary reduction of 60 per cent. The cities that have made 15–per cent reduction on teachers' salaries have thereby saved 2½ cents on the tax dollar, not an important reduction to the taxpayer but a serious handicap to the individual teacher. Mr. Davis in subsequent articles will differentiate the cost of state government into its various avenues of expenditure and will indicate the different sources of revenue—state, county, township, and district. He will endeavor to present educational costs in their relation to other governmental costs. Our purpose in this series of articles is to give the reader of the BULLETIN certain essential information regarding school costs in Ohio which will give him a perspective of educational costs in relation to other costs of governmental maintenance. J.H.M.

EXPENDITURES for schools are an investment. Like other good investments, wisely expended school money constitutes no diminution of the national income. Expenditures for schools do not reduce the total amount of income available for spending. Quite apart from the wholesale economic and social effects of education itself, is the undeniable fact that two and a quarter billion dollars spent for education is also two and a quarter billion dollars in national income. It is spent again, and usually immediately, for goods and services by those to whom it is paid.

"Furthermore, the desirable . . . effects of education are universally acknowledged by men of wide vision and public spirit. Ignorance never made a good workman, a good neighbor, a good citizen, or a good parent. Human assets are of far more vital importance than natural resources and deserve correspondingly more care and thought in their conservation. The special human aptitudes, the technical knowledge, and the social intelligence which must constitute the final basis for national economic welfare are highly perishable assets."[1]

[1] *Op. cit.*, pp. 206–207.

READINGS

COOK, WILLIAM A. "Do the Public Schools Cost Too Much?" *Nation's Schools*, X, No. 3 (September, 1932), pp. 31–34.

Among the reasons cited by the author to support his contention that schools are not costing too much are: the number of pupils in attendance has doubled since 1890, the average school term is nearly two months longer than in 1890, and the purchasing power of the dollar has decreased greatly. The percentage of pupils in high school also has increased from 1.6 per cent in 1890 to 15.5 per cent in 1928; educational service has been tremendously improved through the addition of better trained teachers, better equipped buildings, health supervisions, special facilities for the physically and mentally handicapped, centralized districts, free textbooks, and expanded curriculums.

Numerous articles on school costs such as the one by Mr. Cook are appearing in educational periodicals. The popular demand for economy is causing the schools to examine their expenditures closely, and is bringing to light much of which they may be proud, but it is also to be hoped that it may point the way to greater efficiency in giving the greatest possible returns for the least possible expenditures.

KINNEY, L. B., AND EURICH, A. C. "A Summary of Investigations Comparing Different Types of Tests," *School and Society*, XXXVI (October 22, 1932), pp. 540–44.

One of the issues in test construction has been the essay test versus the so-called new-type test. This article gives a brief review and summary of investigations of the validity, reliability, time required for administration, the relative difficulty, effect on student attitude, and the pedagogic value of both types of tests. It is easily seen that various measures have been used as valid criteria against which to check in constructing new tests. The writers point out that none of these investigations have considered measuring other objectives than information. The validity of a test depends upon its function and the objective which it measures. Clearly, for some purposes, an essay examination may be more valid than a new-type examination. The crucial issue is whether or not the tests measure achievement in the desired objectives. The tests may not even be paper-and-pencil tests. When test construction is based on the measurement of the objectives to be attained, the issue between the essay and new-type tests becomes of minor importance.

HUNTER, GEORGE W., AND KNAPP, ROY. "Science Objectives at the Junior- and Senior- High-School Level," *Science Education*, XVI (October, 1932), pp. 407–16.

By means of the questionnaire technique, science teachers in junior and senior high schools and members of the National Association for Research in Science Teaching were asked to state the objectives of science teaching. The objectives were classified as to frequency of mention. Such a list has a wide range of objectives and includes much more than information alone. Science

teachers will be interested in comparing the objectives which they are helping students to achieve in their own courses with this list of objectives. The list of objectives would be still more valuable if each objective had been defined in terms of the behavior expected of students in attaining these objectives.

WHITLOW, C. M. "The Graduates of the Smaller High Schools," *Junior-Senior High School Clearing House*, VII (October, 1932), pp. 105–13.

In the light of current discussions on Federal and state aid for education, this study of 1,155 persons who were graduated in 1923 from 50 small high schools located in Colorado, Idaho, Kansas, Nebraska, Nevada, and Wyoming is very interesting. Forty-three per cent still reside in the local community; 29 per cent in the home state outside the local community; 22 per cent in other states; 5 per cent could not be located; and 1 per cent are deceased. The men ranked the high-school subjects of most value in this order: English, commercial work, mathematics, and agriculture; the women's ranking was in this order: English, commercial work, home economics, and normal training. From the point of view of school support, probably the most significant finding is that more than one-half of these students whose education had been largely financed by local communities had gone outside their communities during the first seven years following high-school graduation.

BRIGGS, THOMAS H. "A Vision of Secondary Education," *Teachers College Record*, XXXIV (October, 1932), pp. 1–17.

All educators interested in the future of secondary education should read this excellent address delivered at the Conference on Secondary Education this past summer. The following quotation gives the theme of the address:

> More than anything else in this pause of an unprecedented popularization of education, we need a vision of what we hope for the future. It cannot be expected that the vision of any one person will satisfy all. We need the expression of many visions that from the all we can combine into one the best features and unitedly work with directed intelligence toward its achievement.

BURTT, H. E., AND GASKILL, H. V. "Suggestibility and the Form of the Question," *Journal of Applied Psychology*, XV (August, 1932), pp. 358–73.

The authors asked questions concerning objects which could not have been seen in the films shown. They were, thereby, able to compute a relationship between the form of the question and the number of positive replies. The results show that the objective form of the question, such as "Was there a.....?" brings about a greater number of affirmative answers than the so-called suggestive form, or "Did you see a.....?" Although the questions were asked in six different forms, it was found that the difference in suggestibility when asked by the two investigators was greater than the range for all the six forms of the questions. As is pointed out in the article, study of the personality of the person asking the question will probably be more fruitful than inquiry as to the form.

DAWSON, SHEPHERD. "Intelligence and Fertility," *British Journal of Psychology*, XVIII (July, 1932), pp. 42–51.

As in many such experiments, Mr. Dawson uses the intelligence of the children as a measure of the intelligence of the parents. Thus his correlations

are between the number of children in the family and the intelligence of the children. I do not believe the title of his article is especially well chosen, or that it is safe to say, on the basis of his work, that dull parents are more fertile than more intelligent ones. I also wonder if fertility is the proper word to use. It might be better to use the name which suggests the objective data; that is, the number of children or size of family. Mr. Dawson claims that his contribution is original in the sense that individual tests were given to the children rather than group tests. He paints a gloomy picture of the future of the British, relieved only by the occasional appearance of brilliant children from dull parents.

In Paper Covers

McNEELY, JOHN H. *Faculty Inbreeding in Land-Grant Colleges and Universities.* Washington: Superintendent of Documents, 1932. ii+25 pp. (United States Office of Education, Pamphlet No. 31)

Excessive faculty inbreeding has been generally considered to be detrimental to the efficiency and progress of institutions of higher education. Faculty members having obtained their scholastic training in the institutions employing them frequently become steeped in the traditions and practices of their own institutions and as a result often lack the broad outlook necessary to academic achievement.

This inquiry into faculty inbreeding as it exists in 49 land-grant colleges and universities indicates that the practice of employing their own graduates as staff members is general among the institutions. It was found that 30 per cent of the faculty members had done all or part of their undergraduate study at the the institutions where they were employed, and 37 per cent had done all or part of their graduate work at the institutions where they were employed. One teacher out of every nine had received his entire training in his own institution. Engineering faculties had the highest proportionate number of home-trained members while home economics had the lowest percentage. The median salary of staff members who obtained all or part of their training in their own institutions was found to be higher than the median salary of those trained in other institutions in every academic rank except instructor.

The data contained in this study are unfortunately limited as they do not represent the entire faculty of each institution and also are confined entirely to land-grant institutions.

WILLIAM E. ARNOLD

LITTLE, J. KENNETH. *A Critical Study of Public School Costs in Kansas from 1898 to 1928.* Emporia, Kansas: Kansas State Teachers College of Emporia, 1932. 58 pp. (Kansas State Teachers College of Emporia, Studies in Education, No. 6)

This compilation of material is designed to meet the current criticism of school costs and represents an application of the technique used by N.E.A. research studies of Kansas. Good tables and charts illustrate the part of the increased cost of education attributed to the cheapened dollar, greater average daily attendance, the longer school year, and greater service.

H. H. DAVIS

COXE, WARREN W. *Levels and Ranges of Ability in New York State High Schools.* Albany, New York: University of the State of New York, 1932. 44 pp. (University of the State of New York Bulletin, No. 1001)

The increased high-school enrollment in the past twenty years has prompted this study to determine the ranges of mental ability in the high schools of the state of New York. The results of the usual intelligence tests were collected for 18,340 students. These data indicated wide ranges of ability not only in the schools as a whole but also between schools in different communities. It will be profitable to obtain some data on other qualities of high-school students for a whole state.

How well are students achieving the objectives of a high school? What are the attitudes and interests of these students? These questions reflect a need for the clear statement of objectives and the construction of tests to measure achievement along these lines. Abilities and difficulties of students can then be diagnosed more accurately and remedial measures more effectively applied. These tests need not be only paper-and-pencil tests; any devices which can be developed to meet the requirements of an adequate test will be valuable.

FRED P. FRUTCHEY

CALIFORNIA STATE DEPARTMENT OF EDUCATION. *Guide for Counseling in the Secondary School.* Sacramento, California: State Department of Education, 1931. 61 pp. (Bulletin No. C-9)

The wide interest in pupil guidance that has become manifest in the last few years has been stimulated to no small degree by progressive state departments of education. This bulletin on the outcome of a series of field conferences of deans and counselors conducted by Nicholas Ricciardi, Chief of the Division of Secondary Education, is the latest of the bulletins to be prepared by state departments.

The bulletin should be stimulating to the thinking of high-school administrators and teachers, since its point of view is that the student should be helped toward self-discovery. No one can read it without being convinced of the fundamental place of guidance in modern education. From the point of view of the reviewer it is regrettable that greater emphasis was not placed on the opportunities of all class and home-room teachers for guidance. The great majority of schools cannot afford special counselors; all, however, can develop adequate guidance programs through class and home-rooms.

D. H. EIKENBERRY

BACHMAN, FRANK P., Director. *The All-Year School of Nashville, Tennessee.* Nashville, Tennessee: George Peabody College for Teachers, 1931. x+60 pp. (Division of Surveys and Field Studies, George Peabody College for Teachers, Field Studies No. 3)

This study is a survey of some aspects of pupil personnel in the all-year school at Nashville, Tennessee. Data are presented for the entire history of the school from 1924 to 1930. Attendance figures show that the enrollment during the summer quarter is about one-half that of the average for the other three quarters. The percentage of withdrawals in the summer is greater than in the winter. An average subject-load is carried by the elementary-school

pupils during the summer; less than average by junior-high pupils, and still less by senior-high pupils. The percentage of failures is greater in the summer in the fourth, fifth, and sixth grades than in the spring or fall quarters; in the high school the percentage of failures is about the same. The average number of pupils per teacher is somewhat less in the summer than in the winter. This is especially noticeable in the junior-high and elementary schools.

To compare the achievements of pupils who had and had not attended summer school, groups were equated and the statistical significance of the difference determined. No evidence was presented, however, as to the effectiveness of the control factors on which the group were equated. From the results it was concluded that elementary students who do not attend summer school do better than those who do attend summer school. A further conclusion drawn is that the summer school most effectively serves a highly selected group only. Children do not seem to take their summer work seriously. Besides the subject-matter and informational aspects of learning the summer school has other objectives, social and physical, which ought to be more comprehensively evaluated before adequate generalizations can be drawn as to the value of summer schools.

FRED P. FRUTCHEY

Books to Read

SAILER, RANDOLPH C. *Happiness Self-Estimates of Young Men.* New York: Teachers College, Columbia University, 1931. ix+116 pp. (Teachers College, Columbia University, Contributions to Education, No. 467)

This volume is another of the numerous attempts to burrow into the intangibles of personality. The author has sought to construct "a composite measure of general happiness." He has used the questionnaire device seeking "self-estimates of happiness in its various forms and touching many aspects of the lives and attitudes of young men."

The author has used five hundred subjects from many states of the Union, ranging in age from seventeen to thirty-five. These individuals filled out a detailed printed questionnaire, and the author has tabulated the results and interpreted them for a doctoral dissertation. Students of personality will find this volume suggestive, although they will also be inclined to judge the techniques cumbersome and certainly not as clear cut as the personality studies of such individuals as Allport, Thurstone, and any number of other investigators in social psychology.

W. H. COWLEY

HAGER, WALTER E. *The Quest for Vocational Adjustment in the Profession of Education.* New York: Teachers College, Columbia University, 1931. ix+86 pp. (Teachers College, Columbia University, Contributions to Education, No. 491)

According to this investigator, the chances are about three to ten that a Teachers College graduate will be successful in affecting a desired change from a field in which he is experienced to another for which he is preparing himself in graduate courses. Persons who were successful in making changes were not on the average more successful at the end of five years than were those who had not attempted to change fields. As stated by the author, it is

not possible to arrive at a generalization relative to the desirability of attempting a change of occupation. This is an individual matter. Readers who do not have time for the entire study will find it especially worth while to read carefully the summary and conclusions.

R. H. ELIASSEN

BINGHAM, WALTER VAN DYKE, AND MOORE, BRUCE VICTOR. *How to Interview.* New York: Harper and Brothers, 1931. xiv+320 pp.

Everyone who does interviewing will find this volume informative, suggestive, invaluable. This includes social investigators, salesmen, psychiatrists, employment managers, physicians, detectives, college personnel people, lawyers, in fact, professional and business men of every variety and description.

The authors have set out to write a manual of interviewing. They divide their book into two parts, the first devoted to the uses, techniques, and dependability of the interview, the second to researches in the use of the interview for industrial fact-finding. Considerable emphasis is given to the vocational interview both from the point of view of the educational adviser and the industrial employment manager. Special chapters are also devoted to the interview in social case work, to the interview in education, in the mental clinic, in journalism, and in law.

The authors have combed the literature of business, psychology, and medicine and have presented a critical appraisal of the scientific facts about interviewing as well as much material on the art of interviewing. Of particular importance is the section of the volume written to aid individuals to improve their techniques of interviewing. The authors list 52 steps in their discussion of learning how to interview. This chapter alone makes the volume worth its cost.

W. H. COWLEY

TYLER, HENRY T. *The Bearing of Certain Personality Factors Other Than Intelligence on Academic Success.* New York: Teachers College, Columbia University, 1931. vi+89 pp. (Teachers College, Columbia University, Contributions to Education, No. 468)

This author has attempted to discover the relationship between academic success and aspects of personality not primarily intellectual. It is the conviction of many college administrators that we shall never be able to predict academic success until we have measured many of the intangible traits of personality as well as scholastic aptitude and high-school achievement. The author employs a rating scale which he calls the Self-Ordinary-Ideal Scale abbreviated as the SOGI Scale. Investigators in this field will find the scale most suggestive. It is included as an appendix of the volume. About fourteen hundred cases were studied by means of the SOGI Scale and as a result of his investigation, the author concludes as follows:

> The SOGI scores correlate only slightly with academic marks, only two showing correlations certainly greater than zero. . . . With the unfortunately restricted data considered it does not appear that the SOGI Scale in its present form may be used to improve to any practical extent the prediction of academic success.

Despite the failure of the study to demonstrate that the scale devised can be used to assist in the prediction of academic success, the author has devised

an excellent technique for discovering and measuring the self-attitudes of students. Educational and vocational counselors as well as college personnel people in general will find the device unusually suggestive for their work.

W. H. COWLEY

MAYS, ARTHUR B. *Introduction to Vocational Education.* New York: Century Company, 1930. x+323 pp.

Mr. Mays first isolates specific vocational education and devotes several chapters to establishing its relationship to its historic background, its social and economic aspects, its outgrowth from democracy, and its contrasts to "cultural" education. Succeeding chapters describe practices and trends in the various forms of vocational education, legally defined. The author argues that, since the modern age has "discovered the Idea of Progress" (identified by him with democracy) it must provide an adequate chance for vocational training to all workers. All education is regarded in the dualistic light of "cultural" and "vocational" or "chief calling." Each chapter has a good bibliography and leading questions or problems.

BURL N. OSBURN

KILZER, LOUIS R. *Supervised Study.* New York: Professional and Technical Press, 1931. xvi+332 pp.

The author has attempted to provide not only a book on supervised study, but also to supply a carefully selected body of references and sources of valuable materials, and results of experiments, demonstrations, and tests. These objectives have been achieved in admirable manner. The author, however, increases the value of his work by expanding his material beyond the strict limits of his subject into distinct yet correlated fields. He has also succeeded in the difficult task of treating his subject from the point of view of the administrator, the classroom teacher, and the pupil. The result of his efforts is a book which should be most satisfactory as either a textbook or reference book.

W. E. ARNOLD

BOMAR, WILLIE MELROTH. *The Education of Homemakers for Community Activities.* New York: Teachers College, Columbia University, 1931. 135 pp. (Teachers College, Columbia University, Contributions to Education, No. 477)

The family of today recognizes a close relationship to the community. Each depends upon the other. Because the community may be said to be the larger home, attention is called to developing in home-makers a feeling of responsibility for improving the community agencies which affect family life.

Mr. Bomar's study indicates that training in home problems increases the home-maker's appreciation of the contribution which the community makes to family welfare. A greater appreciation, however, on the part of those who have had training does not result in greater participation in community activities. The author recommends, as a means of improving this condition, that more opportunity be provided in home-economics classes for actual participation in community affairs.

The study shows the many community interests of women in all sections

of the country, and it indicates which community activities representative home-makers thought were most important. Listed in the last chapter are the community activities which according to the study should receive more attention in home-economics courses. These activities are not merely listed. Convincing comments cause the reader to appreciate the need for active participation of home-makers in community responsibilities. Those planning home-management courses with emphasis upon worthy community activities as a means of utilizing leisure time will find helpful material in this study.

ENID W. LUNN

CHASE, LUCILE. *Motivation of Young Children.* Iowa City, Iowa: University of Iowa, 1932. 119 pp. (University of Iowa Studies, Studies in Child Welfare, Volume V, No. 3)

The author defines the term "motivation" to include types which should be classed as "incentives in that they are external, indirect or accessory stimuli and 'spring from without, although they work from within.'" The incentives appear to be fairly well selected and carefully administered by means of the Motivation-Dynamometer and Perforation Tests which were well adapted to the measurement of their effects on young children.

The conclusions indicate that

> for a sampling of 259 children in the age range of two to eight years it appears that the absence of external incentive is consistently a deterrent to improvement in performance. Even with knowledge of success on the part of the child it is likely that praise or reward in addition will be helpful. Similarly, knowledge of failure is better than ignorance of results, but the addition of reproof or punishment is stimulating, with a slight margin in favor of reproof.

Dr. Stoddard states in the foreword that the evidence points out the need not so much for a specific incentive as for some incentive above that of knowledge of results. Such a study is appropriate from the standpoint of learning in young children and in relation to the doctrine of punishment.

HELEN SMITH

CAMPBELL, WILLIAM G., AND REED, RALPH KING. *Coaching High-School Athletics.* Los Angeles, California: C. C. Crawford, 1932. 207 pp.

Nearly all books on athletic coaching have to do chiefly with the techniques or strategy of play. Campbell and Reed do not consider these matters at all, except in the last three short chapters which are so superficial as to be of no value. They offer, instead, suggestions for the solution of certain problems which are grouped under these nine heads: maintaining interest among participants, students, and public; organizing the department; financing the department; developing sportsmanship; developing team spirit; lessening ineligibility; gaining harmony within the department; giving the school a good name; improving conditions. The authors state that the problems and solutions were gathered from active coaches, but they give no details of their methods. The discussion of the problems begins with the third chapter. Omission of the first two chapters (the value of athletics and coaching as a profession) would improve the book considerably.

DARWIN A. HINDMAN